Sickle Cell Carrier (Trait)

Hemoglobinopathy screening identifies infants with sickle cell anemia as well as other hemoglobin disorders. The pattern of hemoglobin FAS or ASF indicates a CARRIER state for the sickle cell trait.

Hemoglobin S is a recessively inherited variation of normal adult hemoglobin (hemoglobin A). Hemoglobin S results from a substitution of valine for glutamic acid in the sixth position of the β globin chain. The gene for hemoglobin S has the highest frequency among people of African heritage (about 1 in 10). However, the gene is also found in people of Hispanic or Mediterranean (Italian, Greek, Turkish) descent.

Heredity

If one parent has sickle cell trait (AS), and the other has normal hemoglobin (AA), then none of the children will have sickle cell disease. There is a one in two chance with each pregnancy that the child will get one copy of the S gene, and therefore have the sickle cell trait.

If both parents have the sickle cell trait, there is a one in four chance with each pregnancy that the child will be born with sickle cell disease (two SS genes). There is a one in two chance with each pregnancy that the child will get the sickle cell trait.

Difference between sickle cell disease and sickle cell carrier

Sickle cell carriers rarely have health problems. Carriers may experience discomfort in situations where the oxygen levels are low, such as flying in an unpressurized aircraft. Occasionally they may have hematuria.

Rarely a child is born with the sickle cell trait and another abnormal gene such as hemoglobin C, D, E, O or the beta thalassemia genes. A child with one of these combinations may have symptoms similar to sickle cell disease.

With sickle cell disease, red blood cells become rigid and pointed because of the Hemoglobin S gene inside the cell. This causes the cell to break down, which may cause anemia, pain, and other health problems.

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